RESEARCH DEPARTMENT

THE SERVICE AREAS OF THE ROSEMARKIE TELEVISION AND V.H.F. SOUND TRANSMITTERS

Report No. K-148

(1960/29)

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SUMMARY

This report shows that the Rosemarkie television and v.h.f. sound transmitters provide a good service in the relatively densely populated areas of the Highlands which lie on the shores of the Moray and Dornoch Firths.

1. GENERAL

The Rosemarkie television and v.h.f. sound transmitters are situated 12 miles (19 km) north-north-east of Inverness. The site height is 684 ft (208 m) above mean sea level. The television transmission on Channel 2 (vision 51·75 Mc/s; sound 48·25 Mc/s) is horizontally polarized and is provided by a 0·5 kW transmitter driving a four-tier unipole-V aerial mounted on a stayed mast 256 ft (78 m) above ground level. The minimum and maximum effective radiated powers (e.r.p.s) are 0·4 kW and 1·5 kW respectively. The horizontal radiation pattern (h.r.p.) is shown in Fig. 1.

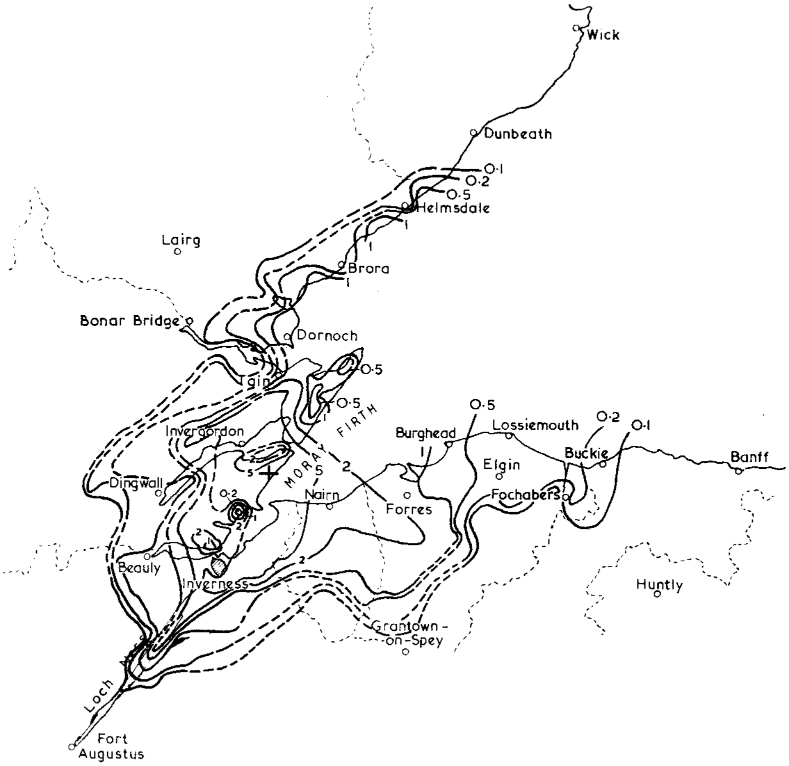
The three v.h.f. sound transmissions in Band II are provided by three pairs of 1 kW transmitters driving a common eight-tier unipole-V aerial mounted 302 ft (92 m) above ground level. The minimum and maximum e.r.p.s are 2·7 kW and 11·8 kW respectively. A sketch of the h.r.p. is given in Fig. 2. The Light, Third and Home programme frequencies are 89·6 Mc/s, 91·8 Mc/s and 94·0 Mc/s respectively.

2. RESULTS

2.1. Television

The results of the television survey are presented in a field strength contour map (Fig. 1), and details of the field strength in the principal towns and villages are given in Appendix I. The service is restricted by the mountains around the firths. A very large proportion of the population is, however, located in this coastal region; the area beyond the 0·1 mV/m contour is very sparsely populated.

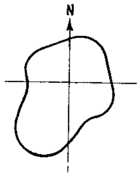
Inverness, by far the largest town in the area, is very well served with a median field strength of 3·5 mV/m. Dingwall, the county town of Ross-shire, with a median field strength of only 0·22 mV/m, and one or two nearby villages are, however, rather poorly served. Also poorly served, although only 6 miles (9·6 km) from the transmitter, is the village of Avoch, where the median field strength is only 0·14 mV/m and the picture is subject to "ghosts".



Note:
The contours represent field strength in mV/m at 30ft (9·1m) above ground exceeded at 50% of receiving sites in a given locality. The value exceeded at 90% of receiving sites may be as much as 10dB below the value indicated by the contours particularly in hilly and built-up areas.

Population within:

5 mV/m	11,400
0·5mV/m	81,200
0·1mV/m	131,100

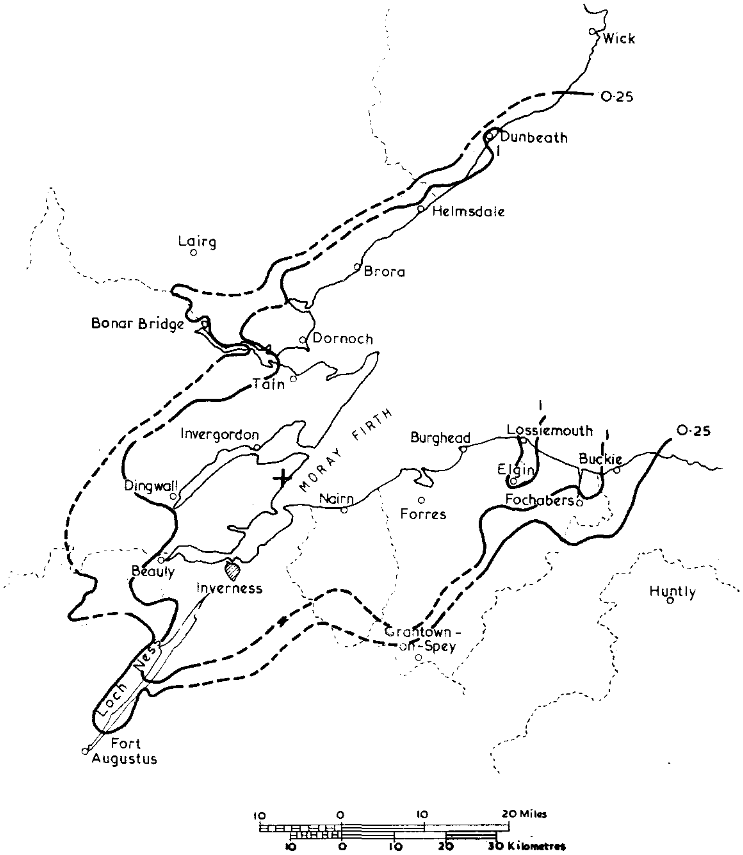


H.R.P.: AERIAL SECTION DRG. No. AE.234

ROSEMARKIE
CHANNEL 2 (51·75 Mc/s)
(MEASURED)

SITE HEIGHT: 684 ft (208m) A M S L
AERIAL HEIGHT: 256 ft (78m) A G L
E.R.P.: 0·4 – 1·5 kW
POLARIZATION: HORIZONTAL
AERIAL: FOUR-TIER UNIPOLE-V

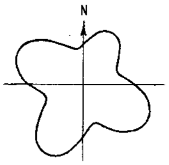
Fig. 1



Topographical information by permission of H.M.S.O.

Population within:

1 mV/m	84,400
0·25mV/m	128,600



H.R.P. AERIAL SECTION DRG. No. AE.247

ROSEMARKIE
BAND II
(MEASURED)

SITE HEIGHT: 684ft (208m) A M S L
AERIAL HEIGHT: 302 ft (92m) A G L
E.R.P.: 2·7 – 11·8 kW
POLARIZATION: HORIZONTAL
AERIAL: EIGHT-TIER UNIPOLE-V

Fig. 2

With these exceptions the populated coastal regions of Sutherland, Ross-shire, Inverness-shire, Nairnshire and Morayshire are well served.

In the interests of clarity the contours of geographically adjacent transmitters are not shown but the coastal region from Helmsdale to Wick is served, partly by Thrumster and partly by Meldrum, while the Rosemarkie and the Meldrum service areas overlap in the county of Morayshire.

Interference from co-channel U.K. transmitters will not be troublesome, a field strength of 0·1 mV/m being protected from perceptible interference for 90% of the time.

The population within the three contours has been evaluated by Engineering Information Department and is given in Table 1.

TABLE 1

Field strength in mV/m	Population
0·1	131,100
0·5	81,200
5·0	11,400

2.2. V.H.F. Sound

The service area of the v.h.f. sound transmitter is shown in the field strength contour map of Fig. 2, and details of the field strength in the more important towns and villages are given in Appendix II.

Comparing the v.h.f. sound and television maps it will be seen that the service area of the v.h.f. sound transmitter (limit 0·25 mV/m) is substantially the same as that of the television transmitter (limit 0·1 mV/m) and links up with that of the geographically adjacent v.h.f. sound transmitters in the same manner as the television service.

The population within the 1·0 mV/m and 0·25 mV/m contours, evaluated by Engineering Information Department, is 84,400 and 128,600 respectively.

3. CONCLUSIONS

The service provided by the Rosemarkie television transmitter is fully up to the standard expected from the site tests.[1] The v.h.f. sound service is rather better than the television service.

The overlaps with the adjacent Meldrum and Thrumster television and v.h.f. sound transmitters are reasonable and a good television/v.h.f. sound signal is now available to the whole of the relatively densely populated coastal region of north-east Scotland.

4. REFERENCE

1. "Low Power Television Transmitters – Rosemarkie", Research Department Report No. K-113, Serial No. 1956/19.

MV

APPENDIX I

TELEVISION

Field Strength in mV/m at
30 ft (9·1 m) a.g.l.

Town	Field strength exceeded at stated percentage locations 10%	 50%	 90%
Alness	7·1	4·5	1·6
Auldearn	4·5	3·5	2·8
Avoch	0·63	0·14	0·09
Bonar Bridge	0·05	0·04	0·03
Brora	0·53	0·33	0·11
Buckie	0·22	0·15	0·09
Burghead	0·94	0·56	0·24
Cromarty	7·1	4·0	2·4
Dingwall	0·35	0·22	0·13
Dornoch	2·4	1·0	0·63
Elgin	0·42	0·25	0·13
Findochty	0·14	0·08	0·05
Fochabers	0·25	0·17	0·09
Forres	1·7	1·0	0·56
Golspie	1·0	0·6	0·4
Helmsdale	0·33	0·16	0·06
Invergordon	34	16	7·5
Inverness	5·6	3·5	2·0
Kinloss	1·4	0·67	0·42
Lossiemouth	0·5	0·21	0·08
Nairn	9·4	4·5	3·2
Portknockie	0·17	0·11	0·06
Strathpeffer	0·28	0·16	0·07
Tain	1·6	0·53	0·25

APPENDIX II

V.H.F. SOUND

Field Strength in mV/m at
30 ft (9·1 m) a.g.l.

Town	Field strength exceeded at stated percentage locations 10%	 50%	 90%
Alness	63	42	19
Auldearn	30	27	15
Bonar Bridge	0·4	0·16	0·08
Brora	3·4	1·7	0·75
Buckie	1·2	0·71	0·3
Burghead	7·5	3·4	0·67
Dingwall	2·5	1·3	0·56
Dornoch	22	7·5	4·0
Elgin	1·7	0·79	0·32
Findochty	1·1	0·25	0·08
Fochabers	1·1	0·67	0·34
Forres	8·9	5·3	2·4
Golspie	5·0	2·5	1·6
Helmsdale	10	1·6	0·5
Invergordon	210	100	42
Inverness	28	16	5·6
Kinloss	6·0	4·2	1·8
Lossiemouth	2·4	0·56	0·12
Nairn	35	18	8·9
Portknockie	1·3	0·34	0·15
Strathpeffer	1·7	0·71	0·28
Tain	3·5	1·5	0·63